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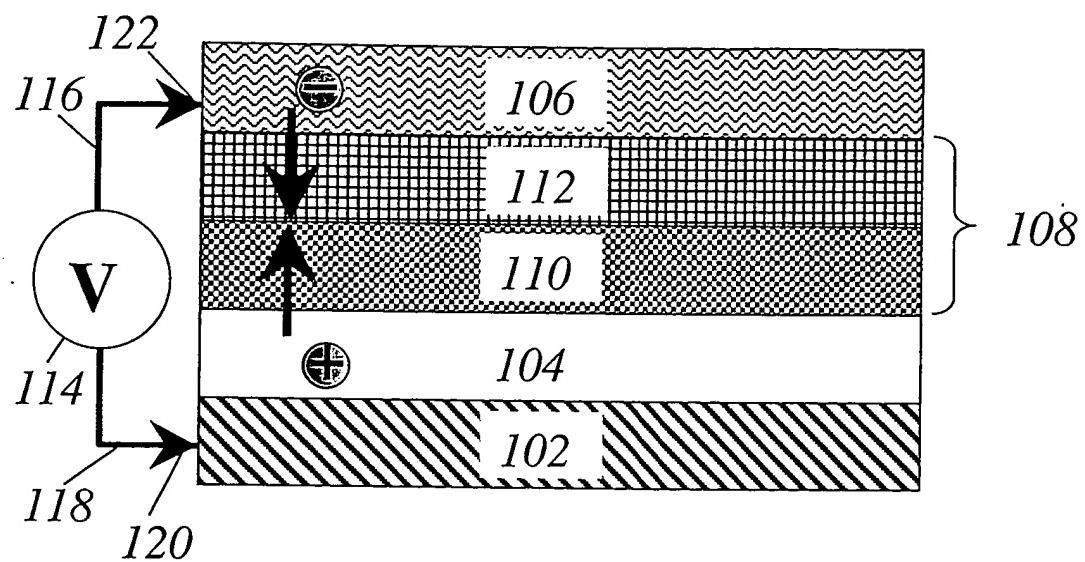
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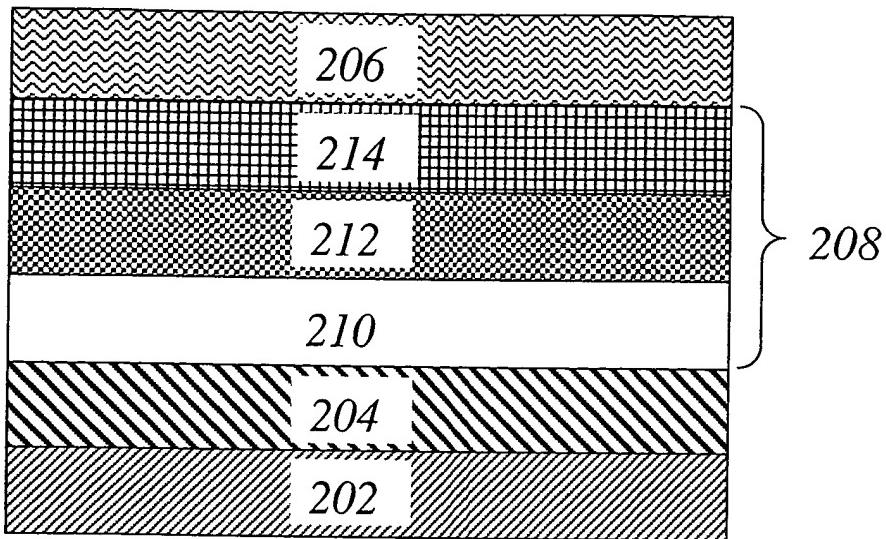
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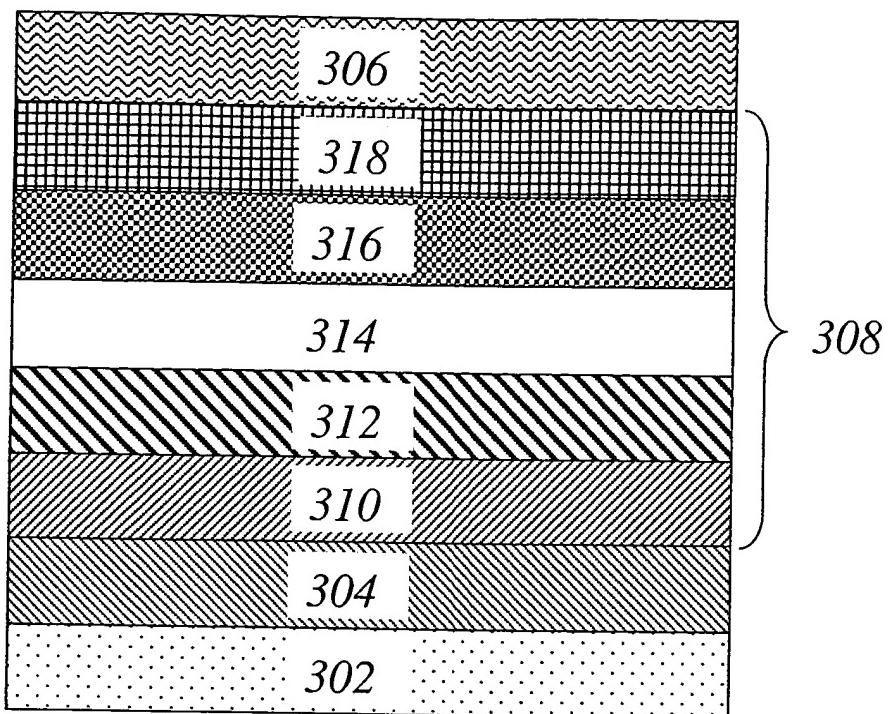
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FIGS. 1. Schematic diagrams of the two-layer structures of preferred EL devices



FIGS. 2. Schematic diagrams of the three-layer structures of preferred EL devices



FIGS. 3. Schematic diagrams of the multi-layer structures of preferred EL devices

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FIG. 4 shows the proton NMR spectrum of compound ARLB-39 in CDCl_3

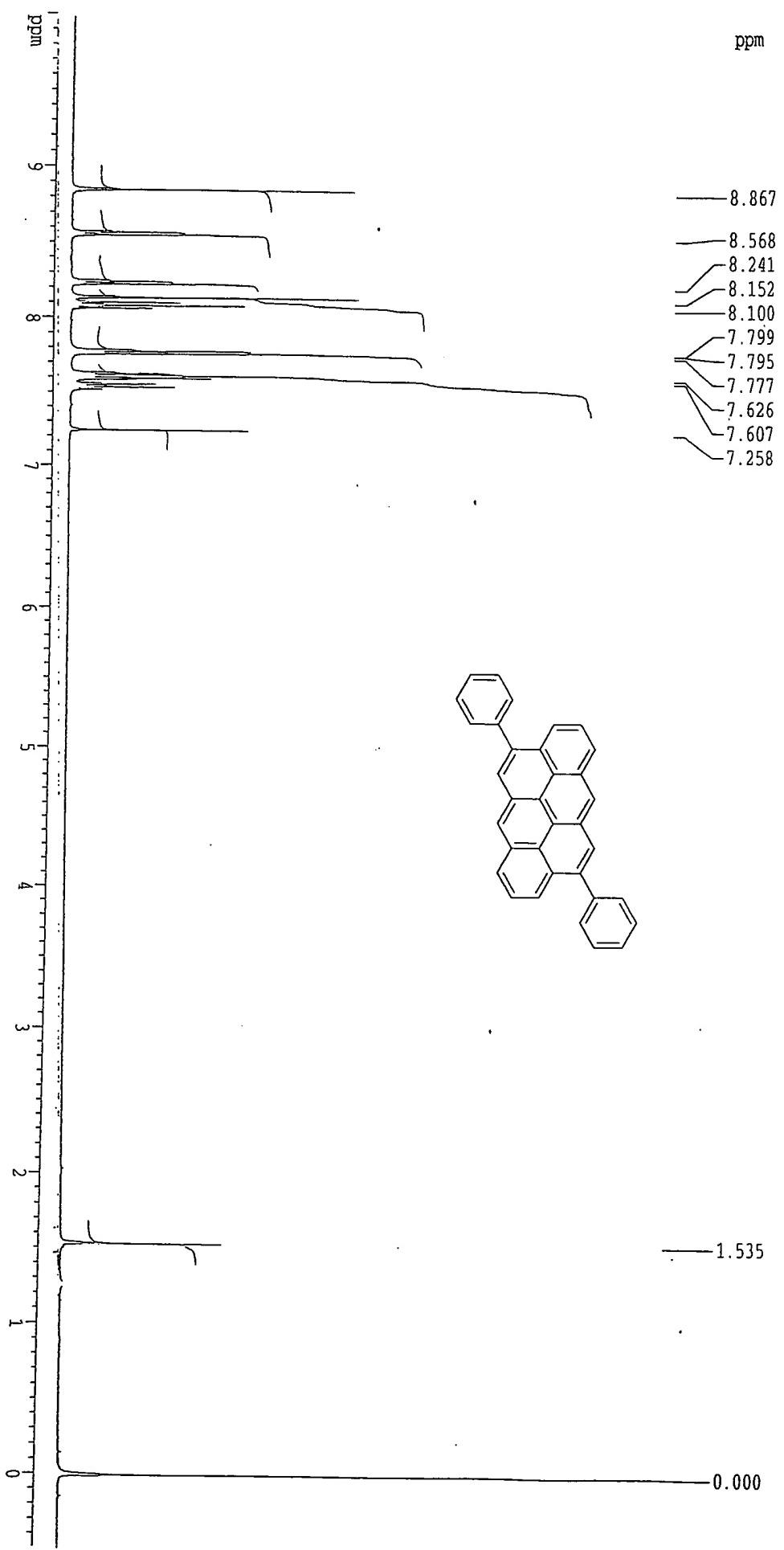
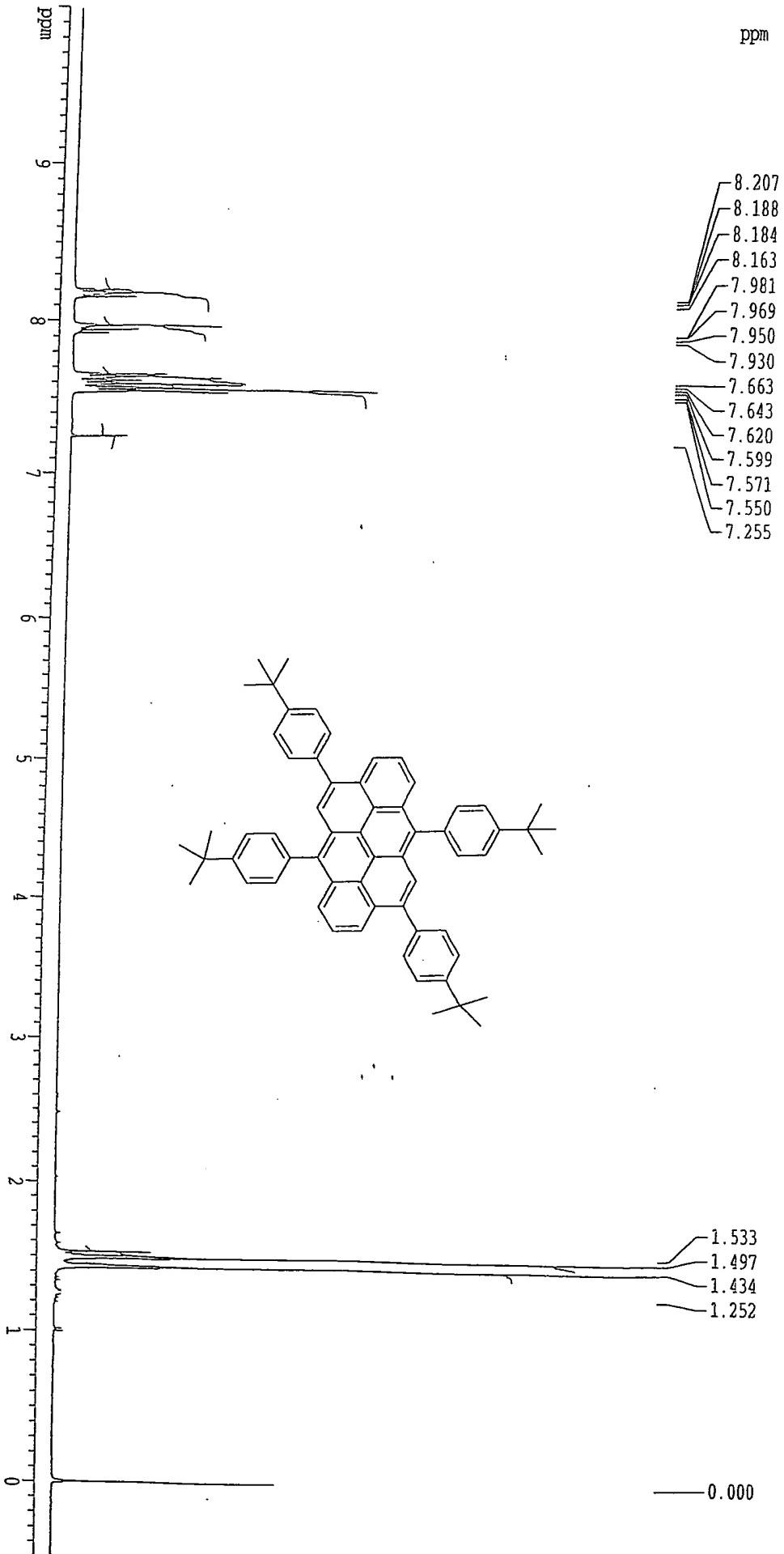


FIG. 5 shows the proton NMR spectrum of compound ARLB-163 in CDCl_3



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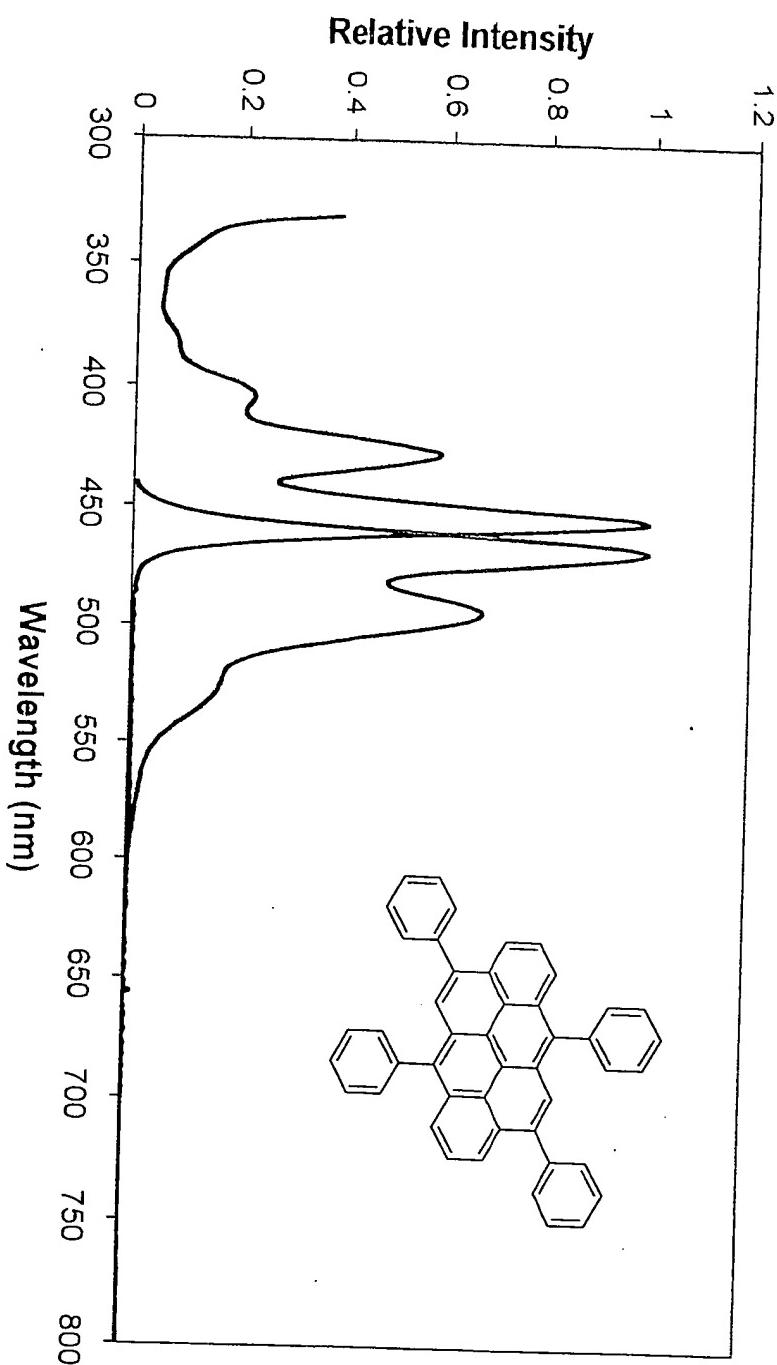


FIG. 6 shows the absorption and emission spectra of compound ARLB-33 in CH_2Cl_2

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FIG. 7 shows the absorption and emission spectra of compound ARLB-39 in CH_2Cl_2

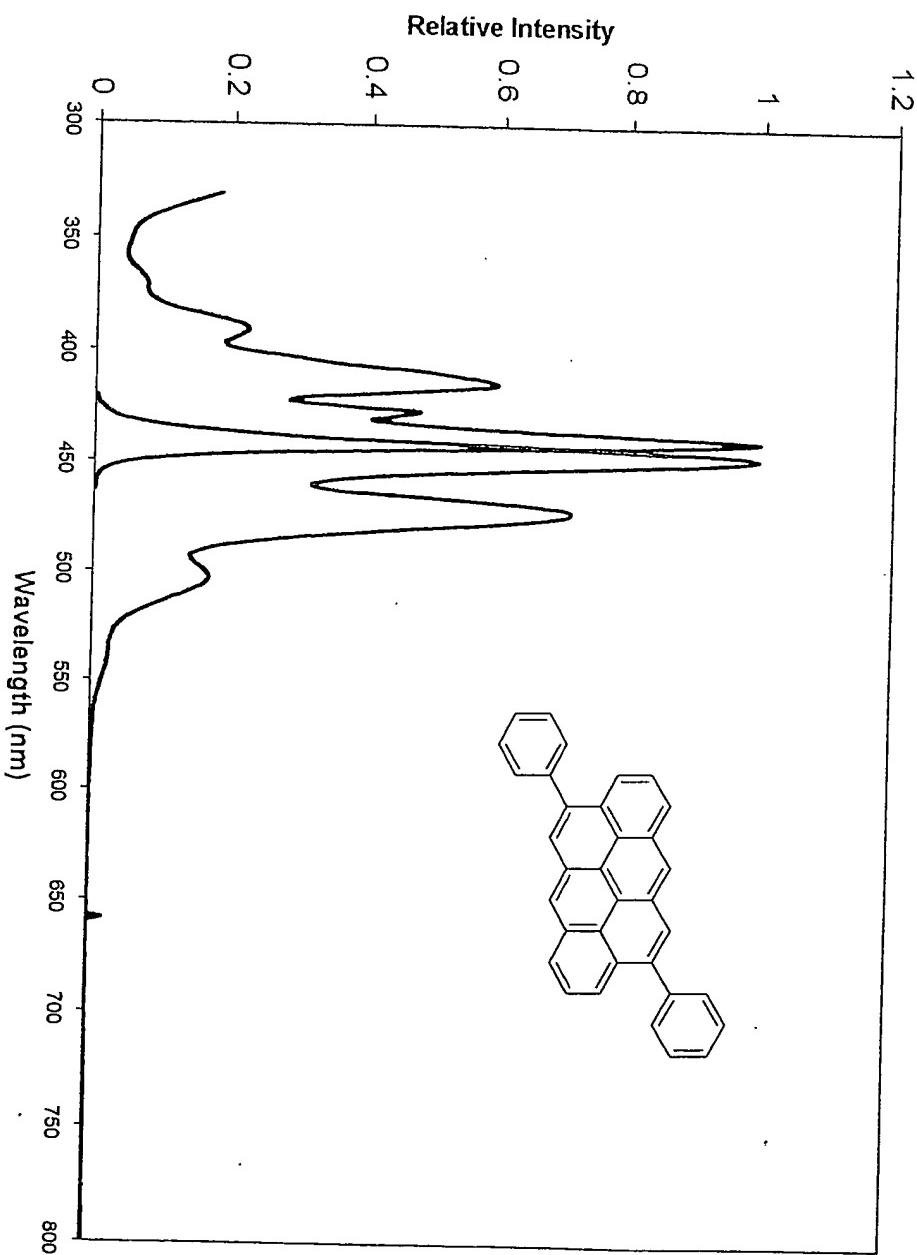


FIG. 8 shows the absorption and emission spectra of compound ARLB-40 in CH_2Cl_2

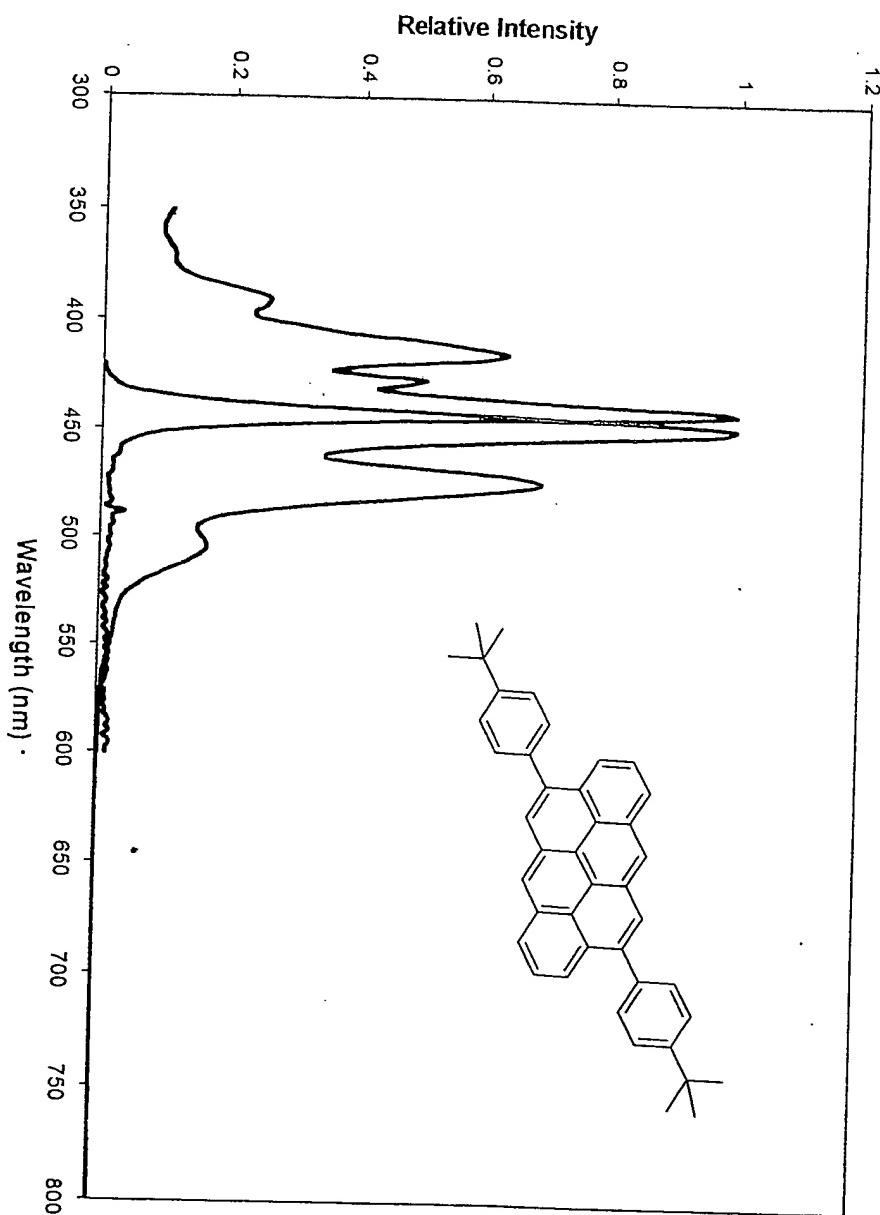
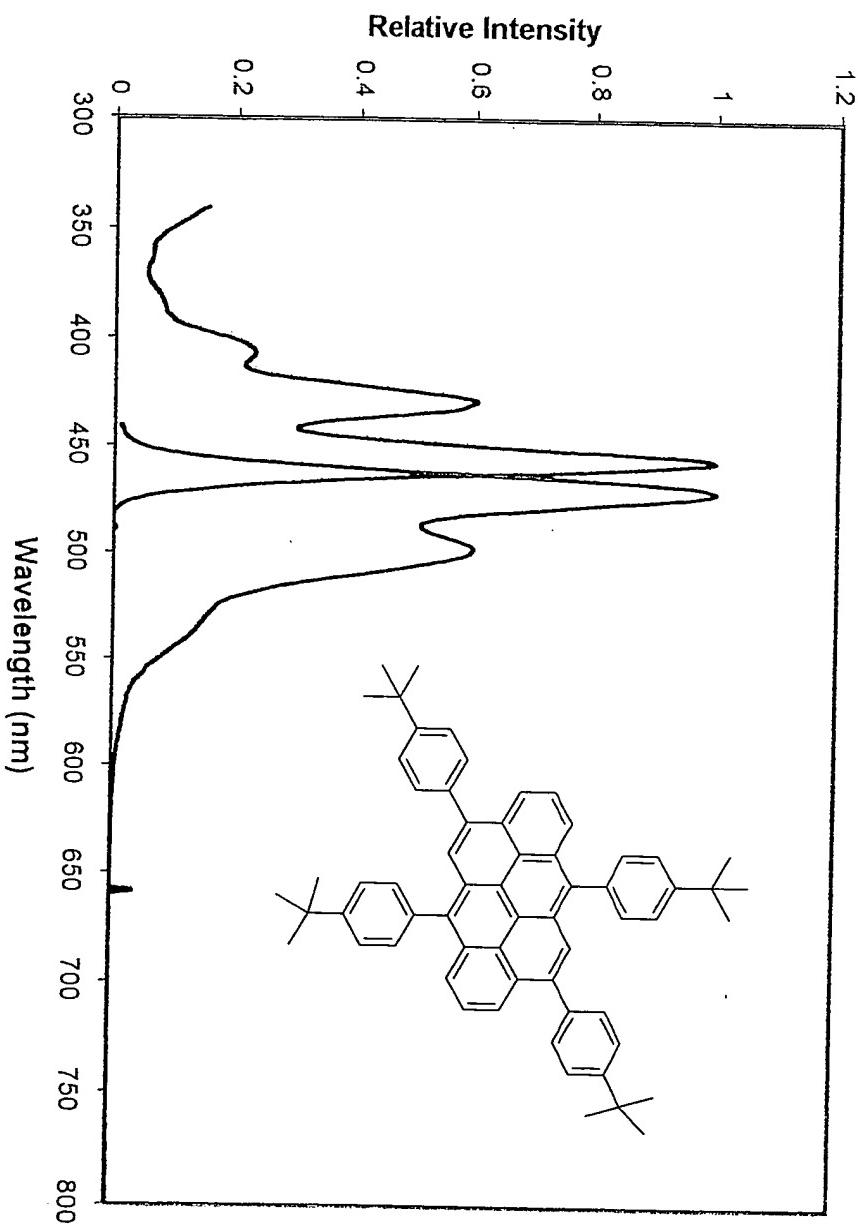


FIG. 9 shows the absorption and emission spectra of compound ARLB-163 in CH_2Cl_2



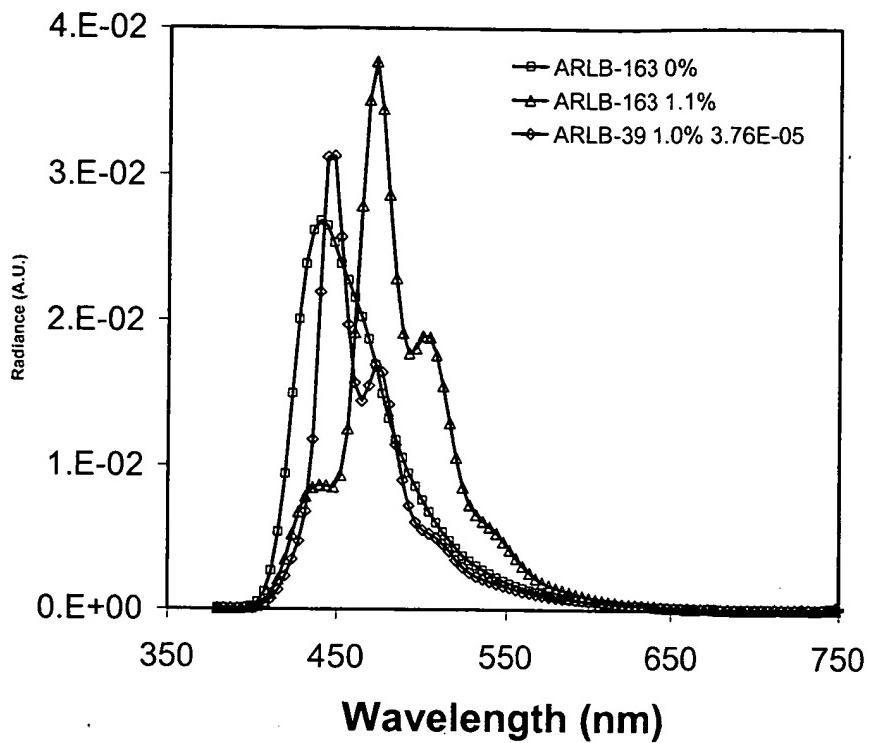


Fig. 10 EL spectra for undoped TBADN (Example 16) TBADN doped with ARL-39 (Example 17) at a concentration of 1.1%, and TBADN doped with ARL-163 (Example 18) at a concentration of 1.0%. The EL spectra were measured at a drive current density of 20mA/cm².

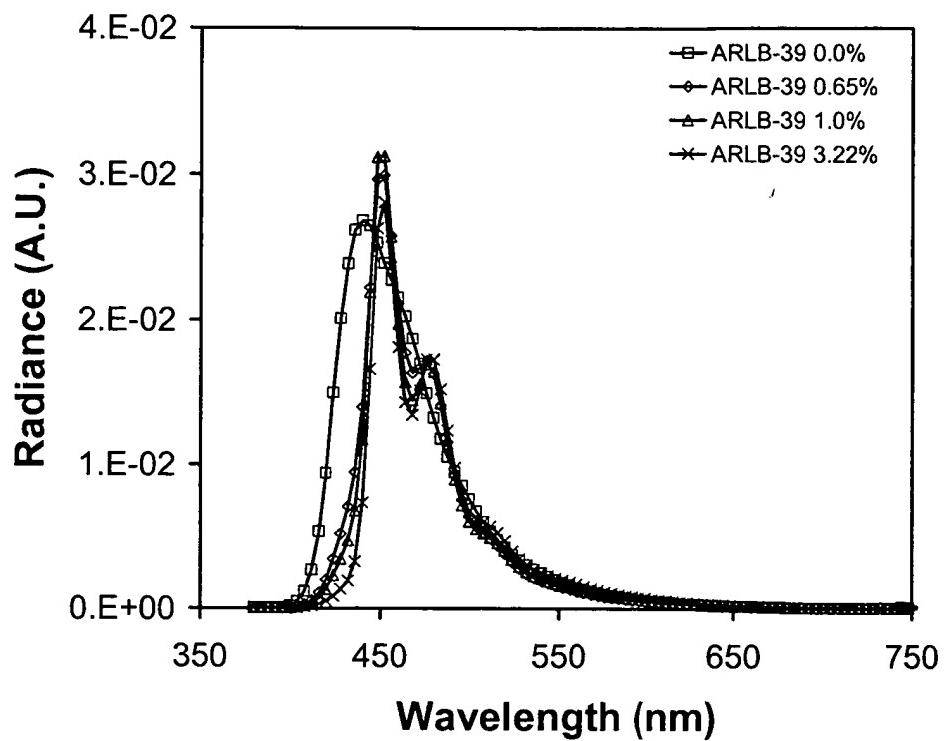


Fig. 11 Spectra for ARLB-39 as a function of doping concentration measured at a drive current density of 20 mA/cm^2

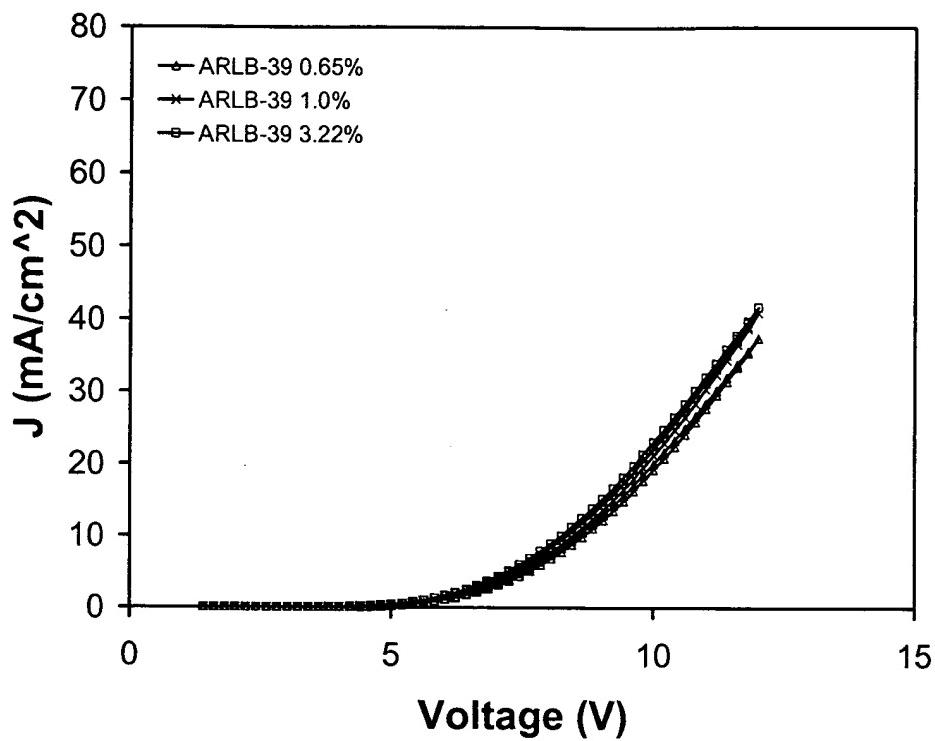


Fig. 12 illustrated the current density – voltage relation as a function of three doping concentration

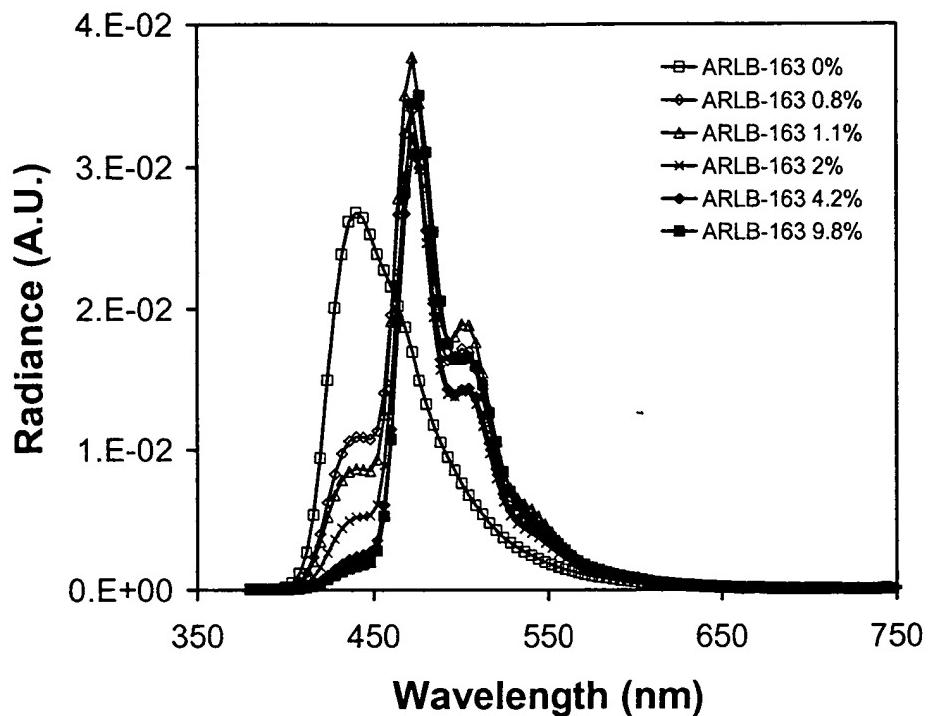


Fig. 13 Spectra for ARLB-39 as a function of doping concentration measured at a drive current density of 20 mA/cm^2
($E_{\text{exc}} = 1 \text{ eV}$)

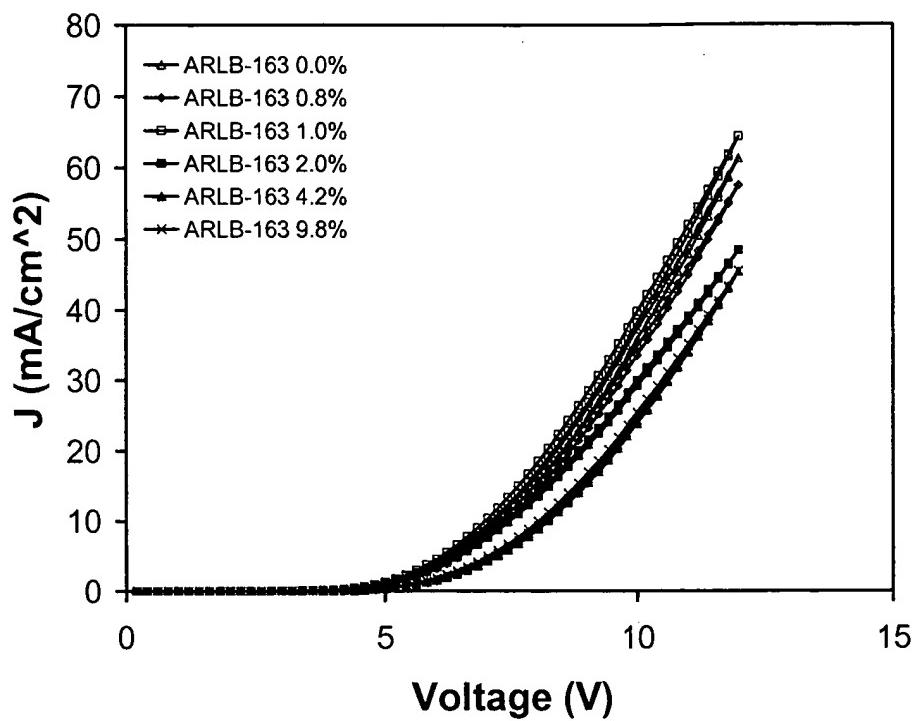


Fig. 14 illustrated the current density – voltage relation as a function of doping concentration.

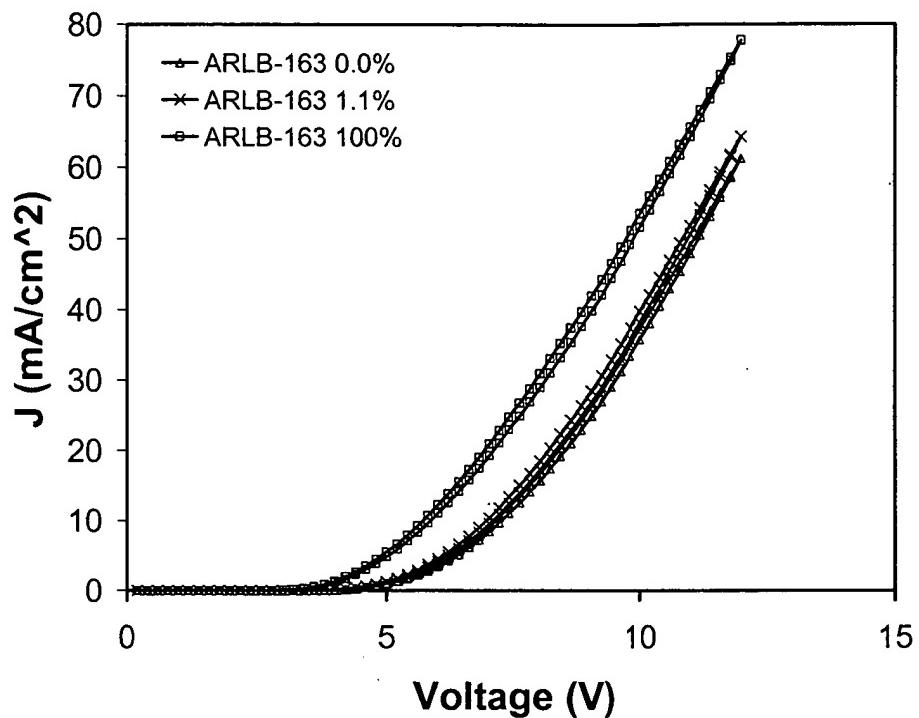


Fig. 15 illustrated the current density – voltage relation for undoped TBADN layer, TBADN doped with 1.1% (v/v) ARLB-163 and 1000 \AA thick ARLB-163 with no doping